COMPUCOLOR AND INTECOLOR USER'S BULLETIN
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EDITOR'S CORNER

VISITORS

We had a visitor from Venezuala this week. Dr. Moros who wrote the very interesting article on Medical Programs in the last issue. (No #13) It seems he didn't get his last shimpment and figured he would come and pick it up in person. He brought his wife and two lovely children with him. Also promised us some more good programs in the near future. Also expect another visitor this week from Havia. Your Velcome. (Our Joke)

CANADIAN MAIL

At this writing the Canadian post is still on strike but it will probable be long over before this issue is ready for the mails. In spite of the strike we recieved our copy of the excellent Canadian User's Group Bulletin. It was hand carried across the border and mailed in the US. We will probably pirate a few articles from it for our next issue. It is an excellent publication and we don't see how Doug does it for less than the cost of printing here in the US.

GENERAL POLICY, EDITORIAL REPLY AND THE EPSON PRINTER.

In line with the above we received a bulletin from another group which sort of thru us a little bit. It seems the author feels we are charging a bit much for our EPSON interface. Let me set the record straight for anyone who tuned in late.

1 - We are or are trying to be a profit making group.
2 - I try to earn my living at this. (Actually considering the offers I have turned down I subsidize the business to the tune of about $25, 000 per year.
3 - There is no volunteer labor involved in the printing of this Bulletin. The help is paid from $5 to $15 per hour.
4 - The engineering costs on that little interface were in excess of $4500.
5 - The labor and parts cost of building and the multiple testing of each module is about $100.
6 - We had no desire to sell the modules seperately but were requested to by some people who were having trouble with their Epsons. They approached us and wanted to buy a proprietary item we had designed to help us sell our large stock of Epsons printers.
7 - The high sale price was because of the footballing of the price on the Epson. After we had purchased a number for stock we found them being advertised at below our wholesale cost. I will be damned if I will spend my time assisting someone who buys somthing that I sell for a fair price that he can buy wholesale but without any back-up or assistance. That is what my customers pay me for when they buy it from me. (Yes they can get it wholesale also, but would prefer to buy it where they can get technical assistance and back-up.) To do so would be to cheat my customers and to give away the product I sell, my time and my services. Therefore

as far as I am concerned anyone who wants to buy their unit else where but needs my assistance in iterfacing can pay part of the developement costs. We are not selling just an interface, we are selling our technical knowhow.

8 - No "NUFF NOT SAID " If I or my salesmen are quoted please quote us properly. No one ever said our Module has a 2k buffer. It doesn't. "On a personal basis", how the hell does anyone know how well we researched the situation. I don't know what came along yesterday but at the time as far as the local Epson people, ISC, the Rochester N. Y. store selling Compucolor and a lot of people, and other computer stores around the country that we talked to were concerned there was no other interface that married the two properly. It was not unreasonable to state that OUR interface board (CAPS and underline author's) was all that would take care of all the nasty problems. As to all the nasty problems, no one at SP, to my knowledge, ever said it was just about impossible to get the two machines to work together. This bulletin stated many moons ago that except for a few minor bugs the Epson worked very well with the CCII and we have been using and selling them long before we had developed our module which solves the two bugs inherent in the interface.

9 - While the high price of the module alone was mentioned, that the total price of the MX 80 Printer, the module, a cable and a small word processor and test program was $750 was not mentioned. This price doesn't seem to far out of line as one advertiser in the same issue of the bulletin was offering the printer for $875 or $125 above our price with our module. Our price also included a cable, and a disk that contains test programs and a small but pretty good Word Processor program.

10- Another thing while our module eliminated the "y's" , that was not its prime purpose. A fix for this was suggested in the same issue. A major problem with the Epsom printer is that while it sits in an interactive state with the user and computer, ie awaiting for a keyboard input to an Input Statement junk from the printer gets into the buffer and goofs up the typed response. I do not know if the suggested fix will solve this problem but it takes modification to the computer and there are a lot of people who will not get into their machines and prefer to have a qualified technician do it. (From the number of repairs we get from people who have tried to install their own mods I would say there are also a lot of people who are willing to get into their machines and shouldn't. The second problem which our module was designed to correct and we haven't tested it to be sure that it was a problem was that we felt the computer speed might be slowed down by the presence of the Epson. Every time the handshake goes negitive and thats 50% of the time it is possible the CPU goes into a hold state. Again we were not absolutely sure of this one.

11- While I would agree with the author that he is obviously not a total idiot in electronics trouble shooting and I too have problems getting control of my emotions, I do feel I have a right to question the author's knowledge of retail sales and the value he places on someone else's work and time. When we sold CB radios we always had people coming in who could buy it cheaper elsewhere and did. When they had a problem and couldn't get it fixed were they bought it because "Those dumb people dont know nothing "they came to us. As we were the local experts and they tried to get free advice and assistance (taking us away from our service bench and paying customers) . We always treated them like the shop lifters they were and bounced them out. We give out and publish a lot of free and low priced assistance, but please don't ask us to give away our merchendise or the services we perform for a fee. Don't call us and tell us you got that item we sell but at a price a hundred dollars below ours but you got a problem and the guy that sold it to you doesn't know and can't help you. Our price is really lower than the other guys price for the merchendise, it's just that we have included service and assistance in our price.

12 The auther of the article suggested the Epson problems could be solved by the installation of a couple of diodes within the computer. We would be interested in a report from any one who tried it. The idea may well work (We haven't test-it out.) but we would like to know if the computer is slowed down when when the Epson is on.

AUSTRALIA

Just received a load of programs from Australia. There must be close to 50 programs. Some of them are programs we already have or are related to special equipment. However amongst them are some really super stuff. I haven't had a chance to go thru them at great length yet but there's a fantastic 10 level Invaders, a fairly good checkers program, a Cribbage game, a Scrable game, with bugs, and a lot of other pretty decent stuff. We may have some of it sorted by the next issue. They also sent us some back issues of their bulletin and there may be some useful hints for ISC users. We will let you know by the next issue.

JIM

We are very sorry to announce that we have lost Jim's services. We could not match the high salary he was offered by a large local company. Jim stayed with us a long time even though he could easily have made more elsewhere. But with one child and another on the way he really had no choice. He is a great guy and we will miss him at work. Outside of work we will, I hope, continue to be good friends. Some orders may get a little goofed up as Sam, who works part time and is in College tries to assume more of Jim's duties. Please bear with us and if we are late or you think we have forgotten an order or FREE software we owe you let us know. Jim used to do all the proof reading on the bulletin so expect a lot more typos and some poor spelling.

CONTEST

The winner of our Software contest will be announce in the next issue. The prize, a set of game paddles will also be awarded. If you have any submission get them in before it is to late.

LARGE CORPORATIONS

We have had some of the largest 3 letter Corporations in the world join our user group in the last year. How about some software or articles from you people. It would be nice to get some application reports.

ISC PROBLEMS

We are going to collect a compendium of the problems some of the ISC's customers has had with ISC and there equipment.
We would appreciate if our members and readers would send in some reports on their experience. We are not saying we will or will not publish these letters but if you do not want your letter published or your name used please so state. This information might even help ISC improve their quality control or improve their customer relations. Perhaps the horror stories are not getting to the right people. We may be able to help direct them there. Any documentation would be appreciated and put to very good use. Probably more on this in the next issue.

PROGRAMS

How many readers would like to see Intecolor and Compucolor programs printed in this bulletin. We have except for filler refrained from printing these programs, except for special ones that demonstrate the machines internal structure, because we felt Byte and Kilobaud and other Computer magazines did a fine job of printing programs and this bulletin was basicaly devoted to printing information on the internal workings of ISC equipment that was not available in there manuels or elsewhere. Perhaps I have been wrong. We could put the bulletin together a lot quicker if we use this material and it may be of general interest. If we have positive response we will start printing some good programs that demonstrate Color and File useage.

CPM

We now support ISC CPM system. We have about 100 8' disks full of CPM programs, mostly junk, but included in the chaff is some very fine Utility, Game, and Business programs. We will if there is a demand transfer some of our regular programs to the CPM format. Most of the programs are in the Public Domain but will not run on ISC equipment. If there is interest as shown by letters to the editor we will boil the data down to a few good disks.

NEXT ISSUE

We expect our next issue will contain some interesting ISC keyboard routines, a print driver, a text editor mod and some more info on internal ISC features. We are trying to get together some business disks, General Ledgers, Receivables, Payables, etc. It has been very time consuming and we held this issue up to announce them, but its taken a lot more time than expected to even reasonable check them out.

August 12,1981

Martin P. Rex

S. P. Electronics
Van Nuys, Calif.

Dear Folks:

I have recently purchased an Epson MX80 printer for my CCII. Here are a couple of tidbits that anyone thinking about the MX80 should know.

1. The friction feed adaptor kit sold by Orange Micro and others does not work. The paper tends to slip on every other linefeed or so. The kit provides only one set of rollers which is not sufficient to keep the paper from slipping. (Selectric typewriters have 2 rollers.) I suggest you consider the MX80FT if you need friction feed.

2. The new high resolution graphics PROM does not work with the 8141 serial board that is usually sold to those asking for the serial interface. If you ever plan to use the graphics capabilities of the printer, make sure you get the 8150 serial board with the 2K buffer. The 8150 costs $135-149 compared to $75 for the 8141.

3. So far I have been unsuccessful in writing a BASIC program for the 8141 to print the screen display if the display contains the CCII special graphic characters. (The Epson PROM contains the TRS80 graphic characters made up of 6 blocks while the CCII special contain 8 blocks.) Theoretically, it can be done easily by simply printing the first top 6 blocks of the CCII character set with the standard Epson set in one pass, scrolling the paper up the height of one block, then printing the bottom 2 blocks in a second pass. This can be done one full line at a time to save time. But, here is the hitch. The Epson is programmed to always form-feed the full 1/8" after a graphic character is printed even if the printer is set for 1/72" line-feeds. Therefore the printer prints a blank line after any line that contains a graphic character, merrily lousing up any display that has vertically contiguous graphic characters. The solution is the approach taken by the author of the article in the last FORUM where the screen is scanned three pixels at a time then printed (would you publish that program for us), or perhaps here's a

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better solution.

With the 8150 serial card and the high res graphics PROMS in the Epson, a program can be written that converts any CCII characters that the Epson doesn't understand into a high res character in a 6x8 dot matrix. This character would be stored in a data statement. I've encluded a program that does just that. It runs fairly fast at 4800 Baud. One full line of data is sent to the printer buffer at a time. While that line is being printed, the computer is busy decoding the next line. This particular program decodes only the CCII special block characters, but with a few more lines of code, anything that the CCII will print to the screen could be printed.

By the way, there is no problem at all in dumping the screen to the MX80 using the 8141 and the standard EPROMS if there are no graphic characters since all the other ASCII numbers are the same. You will find encluded a basic program called 'SCNDMP' which does it with just 2 lines of code.

Obviously, a machine program to do all this is the best solution of all. I understand that Eike Mueller of Intelligent Computer Systems 12117 Comanche Trail Huntsville, Alabama 35803 has written a machine language program to do a screen dump on the IDS Paper Tiger* using high resolution graphics. He tells me that as soon as he can get a graphics PROM for his MX80, he will write the program for the Epson. This method is much better since Eike is planning to include in the program the ability to increase or decrease the size of the display as it is printed.

Also
see
SP DISK
#45

4. I have included a text file that identifies the proper connections on the RS232 cable.

16K MEMORIES

We have just finished our first run of 16k memories and as we promised are lowering the price on the second run. In the future our mail order price on a complete tested memory will be $175.00. In addition we will sell the Printed Circuit Board with the decoding chip and instructions for $80.00 or a complete part kit, board and instructions for $125. WARNING: While we gaurentee the complete tested menory and all that we have sold have worked in the User's machines, we can not gaurentee the kits Your strickly on your own with no assistance. In the past when we have sold kits to supposed experts, they have inserted Chips and Caps backwards and we ended up not only reassembling their units but removing and replacing the damaged parts. If you goof it or it doesn't work there will be a $100 service charged plus a charge on all Components used or replaced. If your not sure of what your doing please purchase the assembled unit. The additional costs covers assemble and testing.

CABLE CONNECTOR BETWEEN EPSON MX80 AND COMPUCOLOR II

RS232 PINOUT:	MX80	CCII	DESCRIPTION
	1	1	protect grd
	3	3	cpu - trans printer rec
	7	14	signal grd
	20	9	pntr ready

CABLE: Good success has been accieved with three conductor cable with coaxial ground.

CONNECTORS:

Printer end

```
13  12  11  10   9   8   7   6   5   4   3    2    1
 .   .   .   .   .   .   x   .   .   .   x   .    x

   .   .   .   .   .   x   .   .   .   .   .   .

  25  24  23  22  21  20  19  18  17  16  15  14
```

rear of DB 25 male connector
(where wires connect to it).
use solder type with hood.

Compucolor end

```
2   4   6   8   10  12  14  16  18   20   22   24   26
.   .   .   .   .    .   x   .    .    .    .    .    .

x   x   .   .   x   .    .    .    .    .    .    .    .

1   3   5   7   9   11  13  15  17   19   21   23   25
```

rear of 13/26 pin card edge
connector with .100" spacing

A Graphics "Clipping" Routine

by Tom Hudson

Sometimes when working with graphics it is necessary to draw a line to a point which is off the screen. Normally you would either omit the line or the computer would give you a CF ERROR. This article demonstrates a routine which will analyze a line and draw only the portion that is on the screen (see figure 1).

The first listing is the clipping routine itself. It is a stand-alone subroutine which may be used in any program. To use it, you simply set up X1, Y1, X2 and Y2 with the coordinates of the endpoints of the desired line and GOSUB 1000. The subroutine will "clip" off the offscreen portion (if any) and draw the line. For example, to draw the line from -10,30 to 140,-8 you simply enter:

```
X1=-10: Y1=30: X2=140: Y2=-8: GOSUB 1000
```

The clipping routine will analyze the line and draw the visible portion. Lines 1000-1080 test the endpoints of the line and set flags if the points are offscreen. Lines 1090-1100 send the points to the actual clipping routine. Lines 1110-1120 make the final determination whether or not the line should be drawn, then draw it if necessary. Lines 2000-2200 are the heart of the clipping routine. I will not go into full detail here, but you can step through the routine yourself and see how it works.

The second listing is a fairly flexible graphics rotation routine. It uses the above clipping routine. You can define any shape, draw it anywhere on the screen, any size and any rotational position you want. As is it will draw spirograph-like patterns based on data you provide in line 500. Lines 10-95 are the routine parameters. SF tells the routine how big the shape should be initially. Here it is set to 2, meaning the object will start out 2 times as big as it was defined. SI tells how much to increment the object's size each time it is drawn. Here it will be drawn 1.1 times the previous size. To keep the object the same size each time it is drawn, set SI to 1. RF tells the routine how many radians to rotate the object each time it is drawn. To keep the object from rotating, set RF to 0. CX and CY tell where the object is to be drawn on the screen. To draw the object at the screen center, set both CX and CY to 64. Lines 130-170 get the object shape data from line 500 and scale it to its initial size (SF). Lines 210-250 increment the size according to SI, rotate the object and adjust it to its proper position on the screen. Lines 300-310 send the line segment coordinates to the clipping routine. Line 320 goes back for the next rotation. Line 500 contains the object shape data. It is in coordinate form as follows:

$$\text{DATA } n, X_1, Y_1, X_2, Y_2, \ldots, X_n, Y_n$$

Where n is the number of points in the object, and the X and Y coordinates are stated in the order in which they are to be drawn. The shape used in this demonstration is a square, and rotates around its center point. To

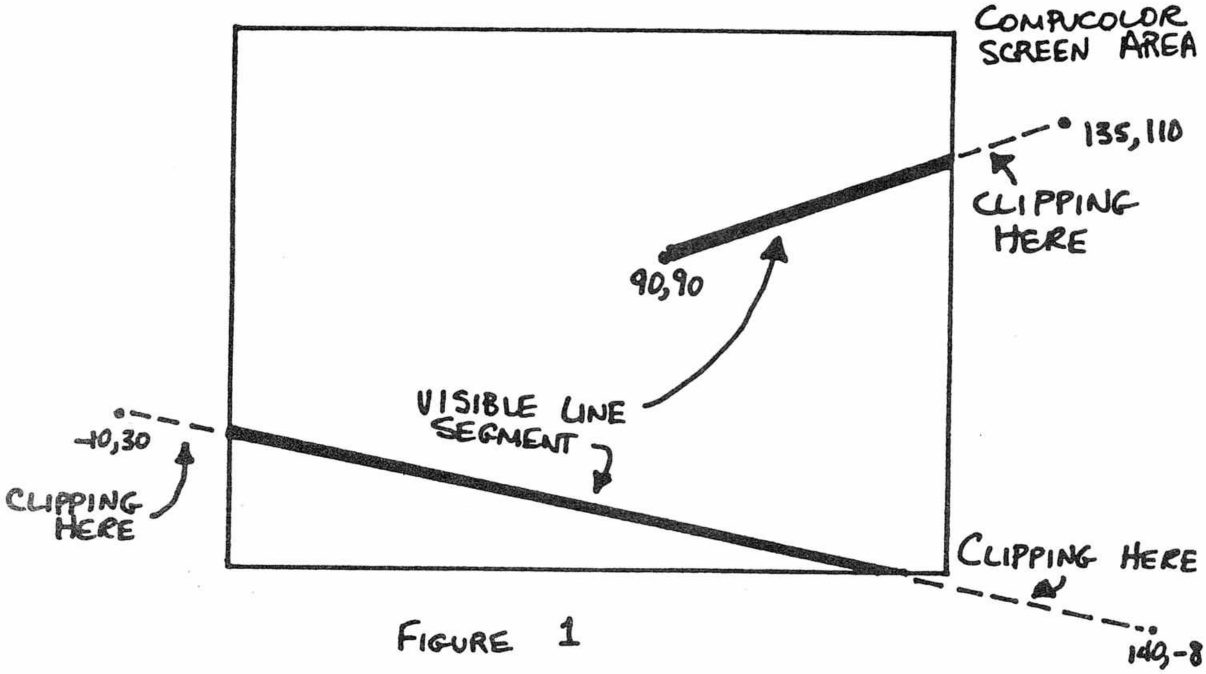

FIGURE 1

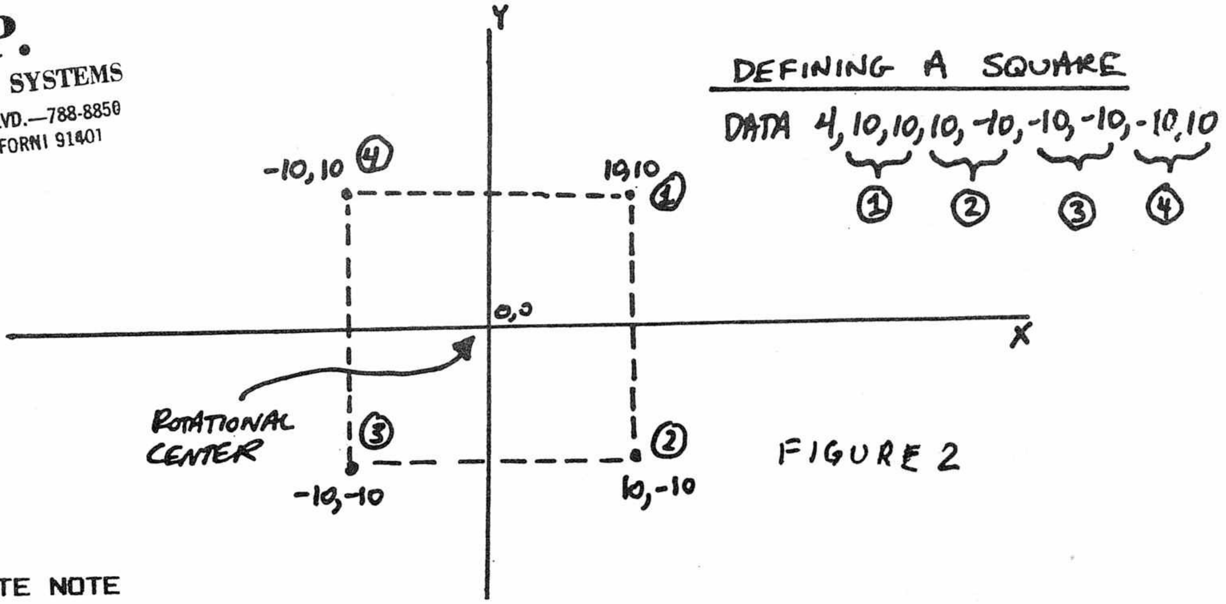

FIGURE 2

LAST MINUTE NOTE

WE UNDERSTAND THERE IS A DEALER IN INDIANAPOLES PREPARING A CLASS ACTION SUIT AGAINST ISC. IF WE FIND OUT ANY MORE ABOUT IT WE WILL PUBLISH THE INFO IN THE NEXT ISSUE OR YOU MAY CONTACT US DIRECTLY IF YOU WANT ANY INFO IF IT BECOMES AVAILABLE SOONER set up a shape, use an X-Y coordinate system as shown in figure 2. Note that the object will rotate around the 0,0 point on the X-Y coordinate grid. In this case, the square is rotating around its center. Try using the following data in line 500: DATA 4,21,21,21,1,1,1,1,21. This defines a square which will rotate around a point to its lower left.

Simply append these two listings together, and you will have a full demonstration of the clipping routine. It can make graphics work much easier when you don't have to worry about those CF errors!

```
SCAN:   MOV     A,M             ;GET BYTE
        CPI     159
        JZ      GOTFN           ;USER-DEFINED FUNCTION
        CPI     142
        JZ      SKIPREM         ;REMARK
        CPI     34
        JZ      SKIPLIT         ;LITERAL
        CPI     0
        JZ      SNLINE          ;LINE#
        CPI     91
        JP      NEXTB           ;SOMETHING BESIDES VARIABLE
        CPI     65
        JP      GOTVAR          ;IT'S A VARIABLE!!!
NEXTB:  INX     H               ;INC TO NEXT BYTE
        XCHG
        LHLD    BAEND
        XCHG
        MOV     A,D
        CMP     H
        JC      DUMP
        JNZ     SCAN
        MOV     A,E
        CMP     L
        JC      DUMP
        JMP     SCAN
SNLINE: INX     H               ;TO SKIP A LINE# IT IS
        INX     H               ;NECESSARY TO SKIP 4
        INX     H               ;BYTES BEFORE GOING TO
        INX     H               ;THE
        JMP     NEXTB           ;NEXT BYTE
```

THIS IS THE SECTION OF XREF THAT WAS CHANGED.
NEW CODE IS ON DISK.

IF ANYONE WONDERS WHY WE STAMP OUR NAME ALL OVER OUR ISSUES. IT IS BECAUSE OUR BULLETIN GETS REPRODUCED ALL OVER THE WORLD WITH OUT OUR PERMISSION AND WITH OUR NAME REMOVED FROM THE COVER. MANY PEOPLE WHO GET IT WONDER WHERE IT ORIGINATES AND ONCE THEY FIND OUT, SUBSCRIBE DIRECTLY. TO GET IT SOONER AND TO TRADE THE DISKS MENTIONED. WITH OUR NAME NAME STAMPED ALL OVER IT'S A LITTE HARDER TO JUST REPRO EACH ISSUE WITH OUT OUR NAME IN IT SOMEWHERE. THE MAIN PURPOSE OF THE BULLETIN IS TO CONVEY INFORMATION AND WHILE THE STAMPS MAY DESTROY SOME OF THE POSSIBLE ESTETIC VALUE IT DOES'T EFFECT THE UTILITARIAN VALUE (OR IMPROVE THE SPELLING) IN THE LEAST.

COMPUCOLR II INPUT AND ESCAPE TABLES

FOR V 6.78 SOFTWARE   BY JOHN RHODES

1. INPUT TABLE ENTRIES (see COLORCUE Vol.I.3 ,Nov.78, p.2)

These entries are held in the respective flag locations, and designate where output (from BASIC or FCS) or input (keyboard or disc) is to be directed. The routine generating output (or processing input) passes the controlling flag location to the output service routine (at 3396H for V 6.78). The output routine uses the flag contents to enter a lookup table to find the processing routine address.

A. FLAG LOCATIONS (common to old and new software) :

Flag name	Use	Location
KEYFL	Keyboard Flag	33247-81DF
FCSFL	FCS Input Flag	33249-81E1
INPFL	Input Port Flag	33251-81E3
BASFL	BASIC Output Flag	33265-81F1
OPFL	Output Port Flag	33272-81F8
LOFL	List & FCS Output Flag	33273-81F9

B. TABLE ENTRIES (table starts at 3728H for V 6.78) :

Contents	Meaning (and flag changes to)	Routine
00	System Display (CRT)	14812-39DC
01	Blind Cursor Display	14780-39BC
02	Graphics Mode	15538-3CB2
03	Expect Cursor X (5)	14859-3A0B
04	Color Pad Plot (non-color control characters to CRT)	15735-3E05
05	Expect Cursor Y (0)	14879-3A1F
06	Expect CCI (0)	14849-3A01
07	Expect Blind Cursor X (8)	14890-3A2A
08	Expext Blind Cursor Y (9)	14903-3A37
09	Expect Blind Cursor CCI (1)	14853-3A05
10,11	Not Used	33221-81C5
12	Garbage Dump (Ignore Input- do not change flags)	14858-3A0A
13	FCS Input Routine	13057-3301
14	Serial Port Output	13251-33C3
15-17	Not Used	33221-81C5
18	Expect Baud Rate (0)	14959-3A6F
19-22	Not Used	33221-81C5
23	BASIC Input Routine	85-0055
24	Not Used	33221-81C5
25	Expect Screen Fill Character(0)	14385-3831
26	Not Used	33221-81C5
27	Expect Escape Chararacter (0,4,13,18,23,25)	15018-3AAA
28-31	Not Used	33221-81C5

2. ESCAPE TABLE ENTRIES (Table starts at 36D8 for V 6.78)

If the escape routine is called the next characteris used to compute an entry into the escape table (notice the similarity to the use of the input table - the same routine is used).

Character	Meaning (see notes for GD/FC)	Routine	
00/@	Not Used (GD)	14858-3A0A	
01/A	Blind Cursor Mode (FC)	14857-3A09	
02/B	Enter graphics mode	14845-39FD	
03/C	Transmit cursor X-Y on RS-232	15197-3B5D	
04/D	Enter FCS w.CRT output	13001-32C9	
05/E	Rentry to BASIC	70-0046	
06/F	Set full duplex (BASIC ignores)	14926-3A4E	
07/G	Enter FCS w.RS-232 output	12990-32BE	
08/H	Set half duplex	14924-3A4C	
09/I	Jump to 36864	36864-9000	
10/J	Set write vertical mode	14992-3A90	
11/K	Set roll-write left to right	14981-3A85	
12/L	Set local mode	14927-3A4F	
13/M	Set all output to RS-232	14846-39FE	
14/N	Ignore all inputs	14846-39FE	
15-17/O-Q	Not Used (GD)	14858-3A0A	
18/R	Set baud rate (FC)	14857-3A09	
19/S	Jump to 40960	40960-	A000
20/T	Jump to 33280	33280-8200	
21,22/U,V	Not Used (GD)	14858-3A0A	
23/W	Initialize and enter BASIC	64-0040	
24/X	Set page mode-write l. to r.	14982-3A86	
25/Y	Set fill page mode (FC)	14857-3A09	
26/Z	Not Used (GD)	14858-3A0A	
27/[	Set visible cursor mode (GD)	14858-3A0A	
28,29/\,]	Not Used (GD)	14858-3A0A	
30/↑	Jump to 33215	33215-81BF	
31/_	Enter CRT mode	9655-25B7	

Note: The Garbage Dump (GD) routine ignores the character and returns. The Flag Change (FC) routine changes the value of the input flag used by the calling routine to the value of the character following escape (see Input Table values).

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FOR SALE USED CPM SYSTEM

19'' 8900 SERIES 48K ISC COLOR CPM SYSTEM WITH DUAL 8 INCH DISSK DRIVES
UNIT INCLUDES $900 ISC WORD PROCESSOR AND EXTENDED WORD PROCESSOR KEYBOARD
PRICE COMPLETE $5000 THIS IS A CONSIGNMENT SALE

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Dear Rick,

I got a copy of your monitor and disassembler from Stan Pro (S.P.Electronics in Van Nuys,CA). My printer does not recognize tabs so I had to add a routine to the disassembler to convert the tabs to spaces. I thought it would be a~~n~~ use of the monitor to assist in debugging the modified disassembler, and in doing so I found a problem. Many assembly language programs (including both of yours) set the keyboard flag to 31 to allow a user vector to point to the input handling routine in the user program. When I tried to use the monitor to execute the disassembler, the disassembler would modify the keyboard vector. Thus, when the breakpoint returned to the monitor, the monitor could no longer get keyboard input. Dead in the water.

The same thing can happen with respect to the ESC ↑ (user escape) vector. This would not happen very often, though. The following mods will correct both problems:

After CHARIN, before CIINIT at the beginning add

```
         PCRT     DS       2          ;User keyboard vector
         PVEC     DS       2          ;User ESC ↑ vector

CIINIT:  LHLD     INPCRT+1
         SHLD     PCRT                ;Saves keyboard vector
         LHLD     UVEC+1
         SHLD     PVEC                ;Saves ESC ↑ vector
         (Continue with original program)
```

In GO TO ADDRESS routine add:

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```
GO3:     PUSH     H
         LHLD     PCRT
         SHLD     INPCRT+1            ;Restore keyboard vector
         LHLD     PVEC
         SHLD     UVEC+1              ;Restore ESC ↑ vector
         POP      H
         (Continue)
```

In the RESTART routine add after second line:

```
RESTART:DI                            ;Part of original program
         SHLD     THL                 ;Also original
         LXI      H,CIINIT
         SHLD     UVEC+1              ;Restore monitor ESC ↑ vector
         LXI      H,CHRINT
         SHLD     INPCRT+1            ;Restore monitor input vector
```

Dear Stan, here is a copy of a letter I sent to Rick Manazir; I think its useful info for anyone [illegible]

With these changes the monitor remembers the vectors and restores them during an execute. When the monitor restarts from a breakpoint, the monitor vectors are restored. However the only way to renter the monitor after using the execute is with the breakpoint since the monitor ESC ↑ is temporarily gone. If the target program does not use the ESC ↑ call there are two ways to eliminate this potential problem:

1. The new program starts at BA17H. The PVEC bytes are at BA15H and BA16H. Once in the monitor you can put 17 in BA15 and BA in BA16.

2. Once in the monitor, exit and reenter the monitor. This will do the same thing automatically. If the target program does not use ESC ↑ it will not change the vector.

I hope this information is of value to you.

Yours truly,

JOHN W
RHODES

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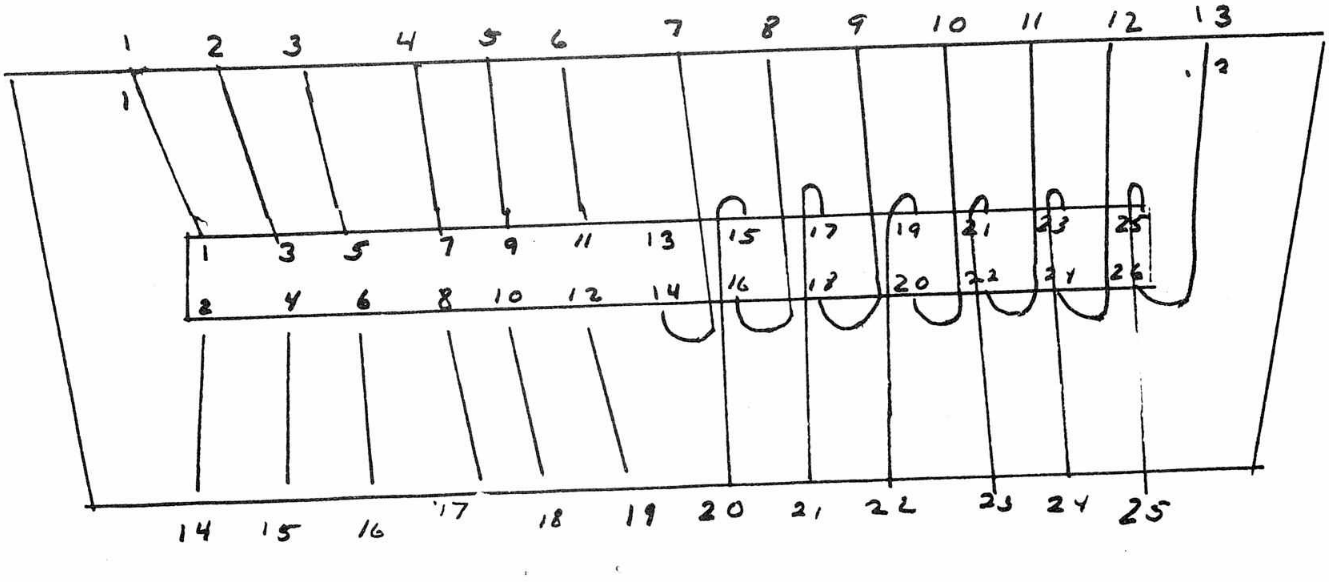
VAN NUYS, CALIFORNI 91401

D TO EDGE CONNECTIONS

D	EDGE	O	EDGE	D O	EDGE	D	EDGE
1	1	4	7	7	14	23	21
14	2	17	8	20	15	11	22
2	3	5	9	8	16	24	23
15	4	18	10	21	17	12	24
3	5	6	11	9	18	25	25
16	6	19	12	22	19	13	26
		NC	13	10	20		



TO PLOT CIRCLES

```
05 INPUT "DIAMETER?"; D
10 FOR A = 0 TO 360
20 LET R = A*0.0174532
25 REM 0.0174532 CORRECTS degrees TO RADIANS
26 REM AND IS DERIVED FROM π/180
30 LET X = (COS(R)*D)+80
40 LET Y = (SIN(R)*(D*1.2))+97
45 REM 1.2 IN LINE 40 is 192/160, X-Y RATIO
46 REM THIS CORRECTS FIGURE TO A TRUE CIRCLE
47 REM AND CAN BE MANIPULATED to FORM ELLIPTICAL FIGURES
48 REM THE TWO NUMBERS AT ENDS OF #30 & #40 POSITION FIGURE ON SCREEN
50 PLOT 2: PLOT X: PLOT Y: PLOT 255
60 NEXT A
70 END
```

BUT THIS IS SO SLOW!! TO SPEED IT UP DO THIS .....

```
05 INPUT "DIAMETER ?"; D
10 FOR A = 0 TO 360 STEP 2
20 LET R = A * 0.0174532
30 LET X = (COS(R) * D) +80
40 LET Y = (SIN(R)*(D*1.2))+97
50 Print INT(X); INT(Y),
60 NEXT A
70 END
```

THEN ENTER THE RESULTANT COORDINATE PAIRS INTO DATA LINES (yes, THERE ARE A LOT OF 'EM)

TO PRINT (OR PLOT) A CIRCLE, USE

```
10 FOR A = 0 TO 360 STEP 2
20 READ X,Y
30 PLOT 2: PLOT X: PLOT Y: PLOT 255
40 NEXT A
50 DATA .........
:   ...............
:   ...............
999 END
```

THE NEXT LOGICAL IMPROVEMENT WOULD BE TO READ INT(X) AND INT(Y) DIRECTLY INTO AN ARRAY, THEN RECALL AND PLOT AS NEEDED.....

THEN SOME REALLY SMART GUY COULD CONVERT TO ASSEMBLY LANGUAGE AND REALLY SPEED THINGS UP.

Denny Hugg
DATA PATH PROGRAMMING, INC.

ANIMATION: STEP 1

How to plot a moving dot

THE MANUAL SAYS THAT, WITH THE FLAG BIT SET AT 1, THE SECOND TIME A LOCUS IS PLOTTED IT WILL ERASE, SO...

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VAN NUYS, CALIFORNIA 91401

```
10 PLOT 30
15 LET Y=66
20 FOR X = 20 TO 120
25 PLOT 2: PLOT X: PLOT Y: PLOT X+1: PLOT Y: PLOT 255
30 NEXT X
999 END
```

FOR A SMOOTHER, MORE FLUID PRESENTATION CHANGE #25 TO

```
25 PLOT 2: PLOT X+1: PLOT Y: PLOT X: PLOT Y: PLOT 255
```

TO ERASE THE RESIDUAL POINTS PRESENT AFTER COMPLETION OF ALTERNATE CYCLES ADD:

```
50 PLOT 2: PLOT 20: PLOT Y: PLOT 121: PLOT Y: PLOT 255
```

TO PLOT A BEAM OR LINE, SUCH AS A 'LASER OR ENERGY BEAM'

```
05 FOR T=1 TO 2
10 PLOT 30: REM PLOT 30 SETS FLAG BIT TO 1
15 LET Y=66
20 FOR X = 20 TO 120
25 PLOT 2: PLOT X: PLOT Y: PLOT X+1: PLOT Y: PLOT 255
30 NEXT X
40 PLOT 2: PLOT 20: PLOT Y: PLOT 121: PLOT Y: PLOT 255
50 NEXT T
999 END
```

FOR A FASTER LINE CHANGE 25 TO PLOT 2: PLOT X: PLOT Y: PLOT

ANOTHER GOOD "WEAPON" IS THE ZAP!

HERE ARE TEN ZAPS

```
10 FOR I = 1 TO 10
20 PLOT 22: PLOT 2: PLOT 155: PLOT 20: PLOT 242: PLOT 20: PLOT 189: PLOT 255
30 FOR Z = 1 TO 100: Z=Z+1: NEXT Z : REM PERSISTENCE INTERVAL OF ZAP
40 PLOT 30: PLOT 2: PLOT 155: PLOT 20: PLOT 242: PLOT 20: PLOT 189: PLOT 255
50 PLOT 29
60 FOR Z = 1 TO 400: Z = Z+1: NEXT Z
70 NEXT I
999 END
```

Denny Hugg
Data Path Programming, Inc.

STAN,

HERE'S A DETAILED EXPLANATION OF THE ROUTINE I FIRST SENT YOU. THIS VERSION IS SELF CONTAINED AND POKES THE ROUTINE TO MEMORY. YOU MIGHT WANT TO PRINT THIS ONE INSTEAD.

RAY SCHREINER

S. P.
ELECTRONIC SYSTEMS
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VAN NUYS, CALIFORNIA 91401

```
 ROUTINE TO TEST DISK RPM  by RAYMOND SCHREINER  9/9/81

        CLEAR SCREEN: POKE THE ROUTINE TO F000
110 PLOT 12:X= - 4096:FOR I= 0TO 33:READ Y:POKE X+ I,Y:NEXT

        SET USER JUMP VECTOR [ESC ↑] TO F000
120 X= - 24902:POKE X,195:POKE X+ 1,0:POKE X+ 2,240

        GET DRIVE NUMBER & CHECK VALIDITY
130 INPUT "DRIVE NUMBER: ";X:IF X< 0OR X> 1THEN END

        GET NUMBER OF TIMES TO TEST AND ZERO AVERAGE COUNTER
140 INPUT "NUMBER OF TIMES TO TEST: ";Y:PRINT :B= 0

        TURN ON SELECTED DRIVE: LET COME UP TO SPEED: CALL ROUTINE TO GET RPM
150 OUT 136,X:FOR I= 1TO 250:NEXT :FOR I= 1TO Y:PLOT 27,30

        ADJUST COUNT FOR 300 RPM AND CONVERT IT TO DECIMAL
160 A= (((PEEK (- 3839)* 256)+ PEEK (- 3840))* 300)/ 56000

        COMPUTE AVERAGE: PRINT RPM # TIMES REQUESTED: TURN OFF DRIVES
170 B= B+ A:PRINT "RPM ="A:NEXT :OUT 136,15:PRINT

        PRINT AVERAGE AND RESTART PROGRAM
180 PRINT "AVERAGE RPM ="B/ Y:PRINT :GOTO 130

        DATA FOR THE ASSEMBLY ROUTINE
190 DATA 33,0,0,6,5,62,212,211,132,219,137,23,210,9,240,62,212,211
195 DATA 132,35,219,137,23,210,19,240,5,194,15,240,34,0,241,201

        EXPLANATION OF ROUTINE POKED TO F000:

33,0,0:     F000  LXI H, 0000     ;[HL] AS COUNTER: ZERO IT
6,5:              MVI B, 05       ;[B] COUNT 5 REVOLUTIONS (5 PER/SEC)
62,212:           MVI A, D4       ;11010100 BINARY
211,132:          OUT 84          ;SET FD1771 TO INTERRUPT AT INDEX HOLE
219,137:    F009  IN  89          ;GET INTERRUPT STATUS
23:               RAL             ;STATUS TO [C]: DID WE SEE 1st INDEX HOLE ?
210,9,240:        JNC    F009     ;IF NOT, LOOP TILL SEEN.
62,212:     F00F  MVI A, D4       ;SEEN: NOW WE'LL COUNT THE TIME...
211,132:          OUT 84          ;...IT TAKES TO SEE 5 REVOLUTIONS
35:         F013  INX H           ;INCREMENT TIME COUNTER
219,137:          IN  89          ;GET INTERRUPT STATUS
23:               RAL             ;STATUS TO [C]: DID WE SEE INDEX HOLE YET ?
210,19,240:       JNC    F013     ;IF NOT, LOOP & COUNT TILL SEEN.
5:                DCR  B          ;HOLE SEEN: 1 LESS TO COUNT
194,15,240:       JNZ    F00F     ;LOOP TILL 5 REVOLUTIONS COUNTED
34,0,241:         SHLD   F100     ;DONE: STORE TIME COUNT
201:              RET             ;TO BASIC

        NOTE: DISK NEED NOT BE FORMATTED. ROUTINE ONLY LOOKS FOR INDEX HOLE
```

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NOTE: TO LOAD A PROGRAM FROM THE MENU USE THE UP AND DOWN ARROW TO ALIGN THE BLUE INDICATOR WITH THE DESIRED PROGRAM AND ENTER RETURN.

B25

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17-SKETCH USES NUMBER PAD TO CREATE GRAPHICS UNDER CONTROL. EXCELLENT GRAPHICS PROGRAM.
18-CHSDSP KILROY IS HERE.

S P ELECTRONICS DISK #66 GAMES 11 PRICE $25.00

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2. MASTER - A VERY GOOD REAL TIME MAZE GAME CONTROLLED BY THE NUMBER PAD IN WHICH YOU RACE AGAINST THE CLOCK TO REACH THE OTHER SIDE, ONLY THE MAZE IS CONSTANTLY CHANGING WHILE YOU'RE MOVING. THE MAZE CONSTANTLY CHANGES WHILE YOU'RE MOVING.

3. MINER - A WELL ILLUSTRATED GAME IN WHICH YOU SEARCH FOR GOLD, BUT WATCH OUT FOR SLIDES AND FLOODS. THIS RATES AS A SUPER GAME NOTE: SEE 'MNINST' FIRST.

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for

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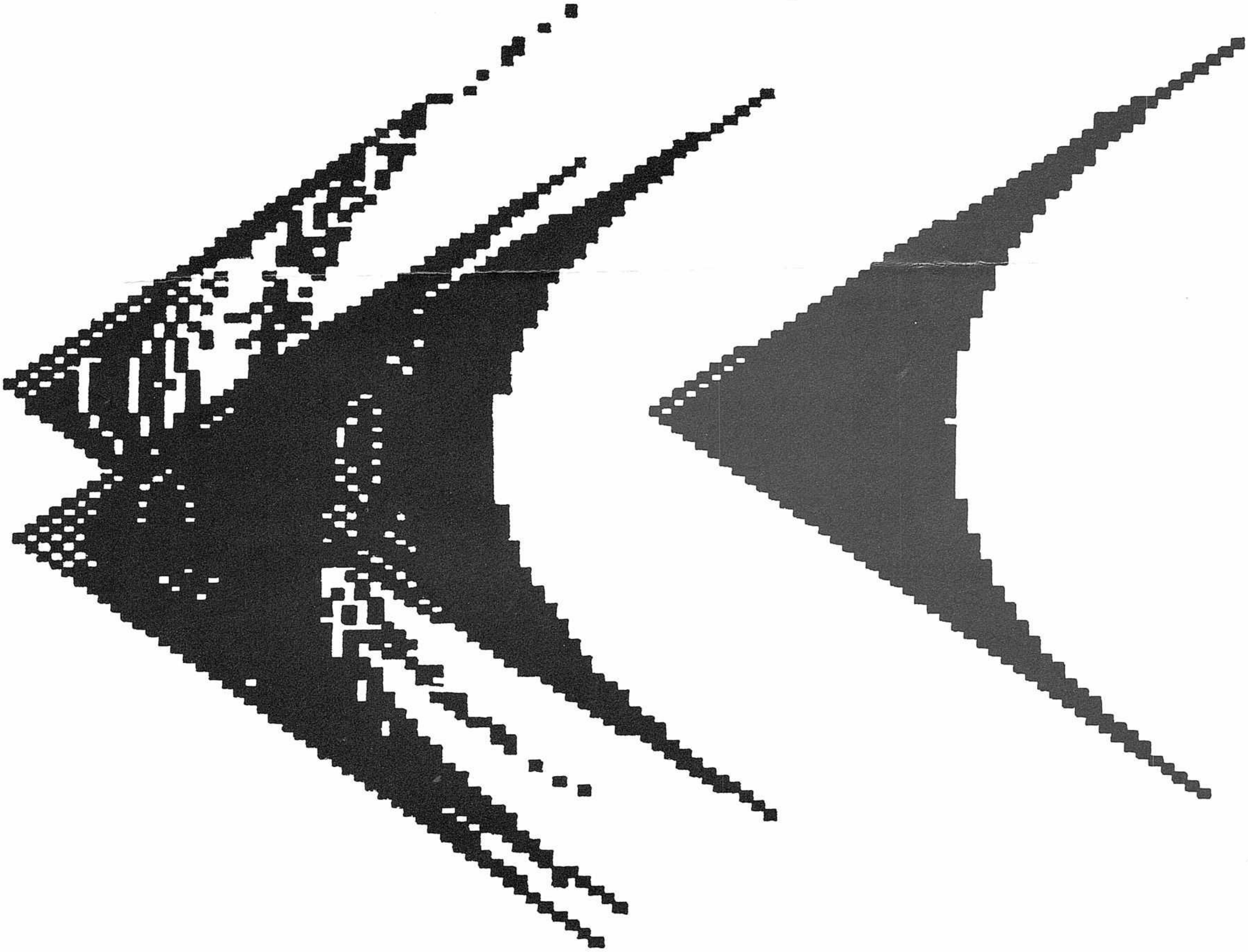

by David B. Suits

COLOR GRAPHICS for Intecolor 3651 and Compucolor II Computers

by David B. Suits

COLOR GRAPHICS for Intecolor 3651 and Compucolor II Computers is intended for those who want to learn the ins and outs of color graphics for the Intecolor 3651 or Compucolor II computer. An introductory knowledge of BASIC programming is assumed.

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Removing plotted lines
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Radar simulation
Animated displays
Fast dice

COLOR GRAPHICS contains over eighty tutorial programs and supplements the above topics with nine appendicies and an extensive index. It takes up where **BASIC Training for Compucolor Computers** leaves off.

David B. Suits received his Ph.D. in Philosophy in 1977 from the University of Waterloo, Waterloo, Ontario, Canada. He presently teaches Logic and Philosophy at Rochester Institute of Technology, Rochester, New York. He has published articles in both philosophy and computer journals and is the author of a number of Intelligent Systems Corporation's programs, including BOUNCE, MAZEMASTER, LINKO and others. His special interests include artificial intelligence, science fiction, games, and music.

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